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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/667,091 | 09/21/2000 | Ping Liang | XDM 00-02 | 6380 |

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| EXAMINER |
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| ART UNIT | PAPER NUMBER |
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| 2189 | |

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/667,091 | Applicant(s) LIANG, PING | |
|---|---|---|---|
| | Examiner Trisha U. Vu | Art Unit 2189 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 September 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 September 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Drawings*

This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 7-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

Claim 7 stated: "the expansion module further includes a USB interface and a conversion circuit coupled between the USB interface and the second USB connector". The second USB connector resides on a housing which is separated from the expansion module, and the USB interface and the conversion circuit reside on the expansion module. Therefore, it is not clear how the conversion circuit is coupled **between** the USB interface and the **second USB connector**. Could it be the **first USB connector** instead?

Claim 12 stated: "the device of claim 1, further comprising a USB controller and a conversion circuit within the housing, the conversion circuit coupled between the USB controller and the **first USB connector**". Similarly, could it be the **second USB connector**?

Claims 8-11, 13-16 are objected for the same reasons above.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4-9, 17-18, 25-26, 28, 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Kikinis (5,841,424).

As to claim 1, Kikinis discloses a mobile device (PC with keyboard 11 serving as a housing) comprising a housing having an expansion module bay (bays 19a-19d) (note col. 3, lines 5-15); an expansion module (adapter or peripheral devices) (note col. 2, lines 9-13) having a first USB connector (female connector 55); and a second USB connector (pin matrix 29) positioned inside the bay to mate with the first USB connector when the expansion module is inserted in the bay (note col. 5, lines 52-60).

As to claim 18, Kikinis discloses a mobile device (PC with keyboard 11 serving as a housing) comprising a housing having an expansion module bay (note col. 3, lines 5-15); a USB controller within the housing (microcontroller 47) (note col. 5, lines 16-29); and a USB connector (pin matrix 29) coupled to the USB controller, the USB connector positioned within the expansion bay module in an expansion module receiving position (note col. 3, lines 33-42).

As to claim 28, Kikinis discloses an expansion module for a mobile device (adapters or peripheral devices) (note col. 2, lines 9-13), the expansion module

comprising: a USB interface; and a USB connector for the USB interface (note Fig. 6 and col. 6, lines 1-8).

As to claim 4, Kikinis further discloses a USB controller (microcontroller 47) inside the housing of the mobile device (note col. 5, lines 16-29).

As to claims 5, 25, Kikinis further discloses the USB controller is configured to function as a USB host (note col. 5, lines 15-51 wherein the microcontroller controls communication between the keyboard and external devices).

As to claims 6, 26, Kikinis further discloses the keyboard is a USB keyboard (note col. 2, lines 17-18) and the keyboard controller can also serves conventional keyboard functions (note the abstract). Thus, the controller can function as a USB device.

As to claim 7, 30, Kikinis further discloses the expansion module (adapter) further includes a USB interface and a conversion circuit (C/A 59) coupled between the USB interface and the second USB connector (note Fig. 6 and col. 6, lines 1-8).

As to claims 8, 9, 31, 32, Kikinis further discloses the conversion circuit reduces/boosts the voltage of a signal on the second USB connector to a corresponding interface voltage and provides the reduced/boosted voltage to the interface if the voltage on the second USB connector is higher/less than the corresponding interface voltage (note col. 6, lines 1-8 wherein the charging adapter converts the one voltage to the other).

As to claim 17, Kikinis further discloses an adapter (adapter 35, 43, 45) (note col. 4, lines 30-39) having a third connector that is connected to a fourth connector, the third connector being a USB connector having a standard USB form factor, the fourth

connector configured to mate with one of the first and second connectors (note Fig. 6 and col. 5, lines 52-65).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 10-11, 27, 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikinis (5,841,424).

As to claim 27, Kikinis discloses a mobile device (PC with keyboard 11 serving as a housing) comprising a housing having an expansion module bay (note col. 3, lines 5-15); a USB controller within the housing (microcontroller 47) (note col. 5, lines 16-29); and a USB connector (pin matrix 29) coupled to the USB controller, the USB connector positioned within the expansion bay module in an expansion module receiving position (note col. 3, lines 33-42). However, Kikinis does not explicitly disclose that the mobile device is a PDA. However, Kikinis discloses that the invention is not limited to a keyboard (note col. 6, lines 19-26) and other known devices could be provided as stand-alone devices independent of existing devices like keyboards (note col. 2, lines 61-64). It would have been obvious to one of ordinary skill in the art at the time the invention was

made to employ a PDA to provide a more compact module with specific desired personal organization functions such as calendar, note taking, database, calculator, and so on.

As to claims 10, 11, 33, 34, Kikinis discloses all the limitations of claims 10, 11, 33, 34 as applied to claims 1, 4-9, 17-18, 25-26, 28, 30-32 above, except the conversion circuit reduces/boosts the voltage of an interface signal to a voltage expected at the second connector and provides the reduced/boosted voltage to the second connector if the interface voltage is greater/less than expected. However, Kikinis discloses the conversion in an opposite direction (note col. 6, lines 1-8). It would have been an obvious matter of designer choice to convert the voltage in the opposite direction which is from the interface to a voltage expected at the second connector since Kikinis teaches how to convert the one voltage to the other between devices, and thus Kikinis' teaching can be applied to convert to a voltage expected at the second connector so that external devices such as PDA, music player,...(note col. 4, lines 30-33) can operate with its own voltage at the interface.

4. Claims 2, 3, 19, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikinis (5,841,424) as applied to claims 1, 4-9, 17-18, 25-26, 28, 30-32 above, and further in view of Ban et al. (6,148,354) (herein after Ban).

As to claims 2, 3, 19, 29, Kikinis discloses all the limitations of claims 2, 3, 19, 29, except wherein the first and the second connectors have a form factor that is different/smaller than a standard USB form factor. Ban discloses that the USB standard offers a smaller form factor and greater ease of user for the end user (note col. 1, lines 43-

53). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ the first and second connectors with a smaller form factor because it is a standard of USB and is specified to be an industry-wide standard promoted by companies such as Compaq Computer Corporation, Microsoft, IBM and Intel (note col. 45-53).

5. Claims 12-16, 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikinis (5,841,424) as applied to claims 1, 4-9, 17-18, 25-26, 28, 30-32 above, and further in view of Hart et al. (6,041,372).

As to claims 12, 20, Kikinis further discloses a USB controller (microcontroller 47) (note col. 5, lines 16-29). However, Kikinis does not explicitly disclose a conversion circuit on the housing side coupled between the USB controller and the first USB connector. Hart teaches a subsystem and an external device (processor module) in which a conversion circuit resides at the subsystem side (note col. 6, lines 26-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a conversion circuit on the main side as taught by Hart, coupled between the USB controller and the first USB connector in the system of Kikinis to provide proper timing between components is achieved (note col. 6 lines 37-44) and also to effectively upgrade external devices with a minimal cost (note col. 2, lines 13-20).

As to claims 15, 16, 23, 24, Hart further teaches the conversion circuit reduces/boosts the voltage of a controller signal to a voltage expected at the first connector and provides the reduced/boosted voltage to the first connector if the controller

voltage is higher/less than the corresponding voltage expected at the first connector (note Fig. 4).

As to claims 13, 14, 21, 22, Hart does not explicitly disclose the conversion circuit reduces/boosts the voltage of a signal on the first USB connector to a corresponding controller voltage and provides the reduced/boosted voltage to the controller if the voltage on the first USB connector is higher/less than the corresponding controller voltage. However, Hart discloses the conversion in an opposite direction (note Fig. 4). It would have been an obvious matter of designer choice to convert voltage of a signal on the first USB connector to a corresponding controller voltage and provides the reduced/boosted voltage to the controller since Hart teaches how to convert a signal from a first voltage level to a second voltage level between a subsystem and a processor, and thus Hart's teaching can be applied to convert between a processor and a subsystem to provide user with flexibility to convert a voltage to/from a device.

## *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, as the art discloses converting signal of a first voltage level to a second voltage level:

| | | |
|---|---|---|
| US Patent | 6,351,809 | St. Pierre, Jr. et al. |
| US Patent | 6,094,063 | St. Pierre, Jr. et al. |
| US Patent | 5,983,297 | Noble et al. |

and USB docking method:

| | | |
|---|---|---|
| US Pub. | 2001/0021101 | Tong et al. |

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trisha U. Vu whose telephone number is 703-305-5959. The examiner can normally be reached on Mon-Thur and alternate Fri from 7:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-305-4815. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Trisha U. Vu
Examiner
Art Unit 2189

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December 29, 2002